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CLAIMS

[Utility model registration claim]

[Claim 1] In the electrolysis cell for hydrogen generating which has the metal electrode connected with the anode plate of a power source to a cell or its interior at the electrode which consists of a hydrogen absorption nature metal connected with an alkali water solution and the cathode of a power source inside a cell, and a list The electrode connected with the cathode of the above-mentioned power source is an electrolysis cell for hydrogen generating which is a pipe-like, arranges the predetermined number of this electrode near

the pars basilaris ossis occipitalis of the above-mentioned cell, respectively, and comes to be open for free passage of the both ends of the above-mentioned electrode to the hydrogen stripping section which was made to penetrate the side attachment wall of the above-mentioned cell, and was prepared in the above-mentioned cell exterior.

[Claim 2] The electrolysis cell for hydrogen generating according to claim 1 which carries out the seal of between the above-mentioned electrode and the above-mentioned side attachment walls by equipping with the O ring which becomes the side-attachment-wall part of the above-mentioned cell which the electrode connected with the cathode of the above-mentioned power source penetrates from alkali-proof macromolecule resin.

DETAILED DESCRIPTION

[Detailed explanation of a design]

[0001]

[The technical field to which a design belongs]

This design is related with the electrolysis cell for hydrogen generators connected with the cathode of a power source using the hydrogen absorption

nature metal as an electrode in detail about the electrolysis cell for hydrogen generators.

[0002]

[Description of the Prior Art]

The electrolysis cell as shows the electrolysis cell for hydrogen generating which generally used hydrogen absorption nature metals, such as a palladium metal, for the electrode connected with the cathode of a power source, i.e., the electrode used as a cathode, to drawing 7 is known, and a cylinder object longwise as a cell 1 is used.

[0003]

This cell 1 is metal, and as shown in drawing 7 and drawing 8 , while a lower limit is blockaded, upper limit is opened wide and has sealed the cell 1 interior by joining to a lid 2 in the flange section prepared here in this upper limit section.

Since this lid 2 and joint material are metallicity, they can use cell 1 the very thing as an anode by forming a terminal 3 in a lid 2 and connecting with it in the anode plate of a power source.

[0004]

Moreover, as shown in drawing 8 , the pipe of palladium metal is perpendicularly

inserted in the interior of the above-mentioned cell 1 as a cathode 4, and it is joined to the cathode support plate 7 with which they were installed through the seal members 5 and 6 between the upper limit part of a cell 1, and the lid 2. The terminal 8 for connecting with the cathode of a power source is formed in this cathode support plate 7.

[0005]

The hole of a predetermined number is prepared in the cathode support plate 7, and the cathode 4 is joined to the cathode support plate 7 by inserting a cathode 4 in this hole and welding silver welding etc. Moreover, the edge joined to the above-mentioned cathode support plate 7 of a cathode 4 and the edge of the opposite side are blockaded by welding of silver welding etc.

[0006]

If the alkali water solutions 9, such as a sodium hydroxide, are poured into the cell 1 interior, a terminal 3 is connected with the anode plate of a power source, a terminal 8 is connected with the cathode of a power source and a current is passed, hydrolysis of water will start within a cell 1. Since the palladium metal of hydrogen absorption nature is used as a cathode 4, occlusion of the hydrogen produced in cathode 4 peripheral face is carried out to the cathode 4 interior, and

it is emitted to the centrum of pulp through cathode 4 inner skin. Subsequently, it moves to the cathode support plate 7 side with which the edge is opened wide, and is collected by the hydrogen stripping section 10 formed between the cathode support plate 7 and the lid 2. The hydrogen collected by the hydrogen stripping section 10 is discharged from an electrolysis cell through the hydrogen exhaust passage 11 established in the lid 2 interior, and is used as hydrogen of business, such as instrument for analysis.

[0007]

Moreover, the cell 1 connected with the anode plate of an electrode serves as an anode, and oxygen generates it on this front face. This oxygen is brought together in the gaseous-phase section 12 between the alkali water solution 9 and the upper limit of a cell 1, and is discharged from the oxygen exhaust port 13 prepared in the wall surface here.

[0008]

Since the water of the alkali water solution in a cell 1 decreases in number, water is supplied from the water inlet 14 established in the lower limit section side attachment wall of a cell 1, and the interface of the alkali water solution in a cell 1 is kept almost constant by hydrolysis.

[0009]

[Problem(s) to be Solved by the Device]

However, if a hydrolysis reaction starts, since occlusion of a lot of hydrogen will be carried out into the palladium metal of a cathode 4, a cathode 4 holds a remarkable heating value. If this cathode 4 touches oxygen at this time, reactions, such as oxidation, will arise and cathode 4 front face will check the hydrogen absorption function of a cathode 4. For this reason, migration to cathode 4 centrum of the hydrogen produced in the electrolysis of water is checked.

[0010]

Therefore, a hydrogen absorption function is checked by the oxygen contained in this gaseous-phase section 12, and the part of the cathode 4 with which it is allotted to the gaseous-phase section 12 in the case of the electrolysis cell for hydrogen generating of drawing 8 reduces the utilization ratio of hydrogen absorption nature metals, such as expensive palladium, by it.

[0011]

Moreover, since the weld zone 15 of cathode 4 lower limit is in the alkali water solution 9, it tends to produce corrosion by a cell reaction etc.

[0012]

Furthermore, since the weld metal of a weld zone 15 does not have an occlusion function for hydrogen, the hydrogen by which occlusion was carried out to the cathode 4 of this part is accumulated in the boundary of a cathode 4 and this weld metal. For this reason, it is easy to produce deformation by the generating hydrogen gas of a weld 15, and a gap is made to a cathode 4 and a weld metal, and it is easy to produce leakage.

[0013]

It is easy to produce deflection in a cathode 4 by generation of heat produced by hydrogen absorption further again. Since the distance of an anode and a cathode 4 becomes less uniform when a cathode 4 bends, by the part of a cathode 4, a difference arises [a hydrogen yield] and a hydrogen yield falls as a whole. Moreover, a hydrogen storage capacity increases, it becomes easy to produce a crack from those, such as change of a crystal lattice, especially the part of many cathodes 4 of a hydrogen yield carries out pulverization, and a hole tends to get bored.

[0014]

Then, the technical problem of this design is not producing corrosion, leakage,

and a hole and offering the electrolysis cell for hydrogen generating in which continuous duty's is possible over a long period of time while raising the utilization ratio of the cathode which consists of a pipe of a hydrogen absorption nature metal.

[0015]

[Means for Solving the Problem]

In order to solve the above-mentioned technical problem, inside a cell this design An alkali water solution, And it sets to the electrolysis cell for hydrogen generating which has the metal electrode connected with the anode plate of a power source to a cell or its interior at the electrode which consists of a hydrogen absorption nature metal connected with the cathode of a power source, and a list. The electrode connected with the cathode of the above-mentioned power source was a pipe-like, has arranged the predetermined number of this electrode near the pars basilaris ossis occipitalis of the above-mentioned cell, respectively, and adopted the configuration which comes to be open for free passage of the both ends of the above-mentioned electrode to the hydrogen stripping section which was made to penetrate the side attachment wall of the above-mentioned cell, and was prepared in the above-mentioned cell exterior.

[0016]

Moreover, the side-attachment-wall part of the above-mentioned cell which the above-mentioned electrode of the above-mentioned electrolysis cell for hydrogen generating penetrates can be equipped with a seal member.

[0017]

Since those both ends made the side attachment wall of a cell penetrate near a cell pars basilaris ossis occipitalis and have arranged near the pipe which consists of a hydrogen absorption nature metal used as a cathode, it is completely immersed into an alkali water solution in this whole cathode. For this reason, since this pipe can be intercepted from oxygen, the whole cathode can be used effectively.

[0018]

Moreover, a cathode is not joined to a cell side-attachment-wall part by welding, but when it holds carrying out a seal by the seal member, the leakage started to the corrosion and the weld zone of welding by direct contact in an alkali water solution can be prevented.

[0019]

[The gestalt of implementation of a design]

Hereafter, the operation gestalt of this design is explained with reference to a drawing.

[0020]

The electrolysis cell for hydrogen generating concerning this design consists of a cell 21 and the electrode 23 connected with the cathode of a power source to this interior, i.e., a cathode, and an electrode 24 connected with the anode plate of a power source, i.e., an anode, a hydrogen stripping section 25, and 25', as shown in drawing 1 - drawing 4 .

[0021]

Although the configuration of arbitration is employable, it is desirable that a base is flat, and as shown in drawing 1 - drawing 4 , since the above-mentioned cell 21 is used as a cell, it needs to be able to pour in and hold the alkali water solution 22 to the interior, so that it can install on a desk. Furthermore, as shown in drawing 1 - drawing 4 , the above-mentioned cathode 23 and the anode 24 are formed near the pars basilaris ossis occipitalis of this cell 21, and have the water layer of predetermined width of face between the thing of the topmost part of the above-mentioned cathode 23, and the interface of an alkali water solution. Therefore, this cell 21 has the structure of having in one both the electrolysis

section which has a cathode 23 and an anode 24, and the water tank section which consists an alkali water solution of the above-mentioned water layer for supplying water to this electrolysis section.

[0022]

Since this cell 21 has the above-mentioned water tank section, even if remarkable water is used by electrolysis, it can prevent that a cathode 23 surfaces on the interface of the alkali water solution 22. Even if the height of this water tank section performs a electrolysis reaction, without supplying water from the exterior about one week, it is desirable to have height than which the interface of the alkali water solution 22 is not less from the thing of the topmost part of the above-mentioned cathode 23. Moreover, when a water surface detector is put in and the water surface descent beyond a convention is produced from the hole 36 established in the top-face section of a cell 21, the amount of the alkali water solution 22 in a cell 21 is kept constant by supplying water from the water feed hopper 37.

[0023]

Moreover, the cathode hole 39 for making the both ends of a cathode 23 penetrate is established in the side attachment wall of the electrolysis section of

this cell 21 according to the number of a cathode 23.

A cathode 23 has a possibility that the alkali water solution 22 may leak out from this cathode hole 39, although that edge has projected to the exterior of a cell 21 through this cathode hole 39. A seal is given to the side attachment wall of the electrolysis section of this cell 21 in order to prevent this.

[0024]

The seal approach of arbitration, such as welding, can be used for this seal.

Silver welding can be adopted when welding. However, since this part welded contacts the alkali water solution 22, when the metal used for a cathode 23 differs from the metal used for welding, a cell reaction arises among both and a weld may be corroded. In order to prevent this, it is more desirable to carry out a seal using the macromolecule resin which does not weld with a metal but has alkali resistance. Thereby, the seal of between the side attachment walls of a cathode 23 and a cell 21 can be carried out.

[0025]

As this giant-molecule resin, they are butadiene rubber, chloroprene rubber, nitrile rubber, ethylene-propylene rubber (EPR), and a styrene butadiene rubber (SBR).

Acrylic rubber, polyether polyurethane rubber, polyester-polyurethane rubber, etc. are raised. Moreover, especially as a configuration of the above-mentioned seal member, although not limited, an O ring etc. can be raised, for example.

[0026]

What is necessary is just to equip with the above-mentioned seal member the cathode hole 39 which a cathode 23 penetrates among the electrolysis sections of a cell 21. Moreover, when it is hard to prepare a direct seal member in this cathode hole 39, as shown in drawing 3 or drawing 5, while a cathode 23 penetrates on the external surface of the cathode hole 39, the seal auxiliary member 28 which can equip with the seal member 29 can be formed in it. While equipping the seal auxiliary member 28 with this seal member 29, by installing the seal auxiliary member 28 in cell 21 side attachment wall so that this seal member 29 may stick with cathode hole the periphery of 39 yen of the side attachment wall of a cell 21, the seal between the cathodes 23 and cell 21 side attachment walls by the seal member 29 can be realized easily, and anchoring of the seal member 29 becomes easy.

[0027]

As an ingredient of the above-mentioned cell 21, when using cell 21 the very

thing as an anode so that it may mention later, the below-mentioned metal is used, but when not using a metal, especially if it is the ingredient which has resistance in the alkali water solution 22, it will not be limited. As such an example, synthetic resin, such as polypropylene resin and polyvinyl chloride resin, is raised.

[0028]

The above-mentioned alkali water solution 22 is a water solution of an alkali-metal hydroxide. Especially as this alkali-metal hydroxide, it is not limited and the thing of arbitration, such as a sodium hydroxide and a potassium hydroxide, can be used. Moreover, what is necessary is not to limit especially the concentration of the alkali-metal hydroxide in the alkali water solution 22, and just to adjust it according to the amount of the hydrogen generated by the electrolysis of water. In addition, since water is electrolyzed, an alkali-metal hydroxide remains. For this reason, if water, such as ion exchange water, is supplied from the water feed hopper 37, the concentration of the alkali water solution 22 will be kept constant.

[0029]

The above-mentioned anode 24 is metal and is prepared in a cell 21 or its

interior.

It is not necessary to prepare another anode for cell 21 the very thing in metal, then the interior especially. However, when the base of a cell 21 is also made into metal, in case the oxygen generated from here surfaces, it is easy to produce the case where a cathode is contacted, and the hydrogen absorption function of a cathode may be made to check. For this reason, when using cell 21 the very thing as an anode, it is desirable to make the parts, for example, a both-sides side and a both-ends side, other than a base into metal.

[0030]

moreover, the cell 21 -- or an anode 24 may be formed in the interior independently [a cell 21].

Although the approach of arbitration can be used for it, in case the oxygen generated in electrolysis-of-water reaction time surfaces, in order for the configuration method of the anode 24 to the cell 21 interior to prevent contacting a cathode 23, it is desirable that a cathode 23 is made not to be arranged above an anode 24. For example, as shown in drawing 4 , the pipe of a cathode 23 can be arranged in predetermined spacing in all directions, the plate of an anode 24 can be built perpendicularly, it can be made to be able to intervene between the

pipes of a cathode 23, and the column of the pipe of a cathode 23 and the plate of an anode 24 can be arranged by turns. If all the anodes 24 are connected with the anode communication rod 26 and that end is made to project outside from a cell 21 at this time, it can be dealt with as a terminal 27 which can connect a part for this lobe with the anode plate of a power source.

[0031]

Thus, since a straight direction will turn into the direction of a vertical even if a cathode 23 bends with the heat produced by hydrogen absorption if the anode plate 24 is built perpendicularly between cathodes 23 and the anode plate 24 and a cathode 23 are arranged by turns while putting a cathode 23 in order in all directions, change is not produced in the distance of the anode plate 24 and a cathode 23. For this reason, the crack of the cathode 23 by increase of local hydrogen absorption is pulverization-made hard for the bias of the hydrogen yield by the part of a cathode 23 not to arise, even if a cathode 23 bends with heat, but to produce, and it can prevent that a hole opens in a cathode.

[0032]

Especially as a metal used for an anode 24, it is not limited and nickel etc. can be raised as an example.

[0033]

The above-mentioned cathode 23 consists of a metal of hydrogen absorption nature, and is a pipe-like. The predetermined number of this cathode 23 is arranged, respectively (the near a pars basilaris ossis occipitalis (i.e., the above-mentioned electrolysis section) of a cell 21), and the both ends of a cathode 23 are opened for free passage by the hydrogen stripping section 25 and 25' which were made to penetrate the side attachment wall of a cell 21, and were prepared in the cell 21 exterior. Although arrangement of a cathode 23 will not be limited especially if the side attachment wall of a cell 21 is made to penetrate, it can be allotted horizontally, for example, and may have and allot a predetermined include angle to the base of a cell 21 if needed.

[0034]

As the above-mentioned hydrogen absorption nature metal, especially if it has a hydrogen absorption function, it is not limited, and palladium etc. can be raised. Moreover, although 100% of the purity of the above-mentioned hydrogen absorption nature metal is the most desirable, the impurity may be contained, if it does not need to be restricted to this and a hydrogen absorption function is not affected. From the point of a hydrogen absorption function, 60% or more of the

content of the above-mentioned hydrogen absorption nature metal is desirable, and is more desirable. [85% or more of]

[0035]

The metal terminal drawer plate 31 is formed in the edge which penetrated the cell 21 of the above-mentioned cathode 23, and projected outside. The terminal 32 is formed in the side face of this terminal drawer plate 31, and it connects with the cathode of a power source here.

[0036]

The both-ends edge which penetrated the cell 21 of each above-mentioned cathode 23, and projected outside is open for free passage to the hydrogen stripping section 25 and 25' like the publication to drawing 3 or drawing 5 .

Occlusion of the hydrogen generated in electrolysis is carried out to a cathode 23, it is emitted to the centrum of a pipe, and is brought together in this hydrogen stripping section 25 and 25'. The hydrogen stripping section 25 and the hydrogen brought together in 25' are drawn from here outside.

[0037]

If it arranges so that the both-ends edge of each cathode 23 may be allotted, it is not carried out especially about that configuration method, but this hydrogen

stripping section 25 and 25' may be prepared in contact with the side attachment wall of a cell 21, for example, as shown in drawing 3 or drawing 5 .

[0038]

As an example at the time of forming the terminal drawer plate 31 and the hydrogen stripping section 25 in contact with the side attachment wall of a cell 21, the configuration shown in drawing 3 or drawing 5 is raised. This forms the terminal drawer plate 31 in contact with the seal auxiliary member 28 of a cell 21, and forms the hydrogen stripping section 25 in contact with this terminal drawer plate 31. The cathode 23 is supported, and the seal of the terminal drawer plate 31, and the hydrogen stripping section 25, the hydrogen stripping section material 33 of 25' and 33' is carried out by the seal member 34 and 41, and the seal auxiliary member 28 and the terminal drawer plate 31 prevent the leakage of the collected hydrogen while carrying out the seal of between both by the seal members 41, such as an O ring.

[0039]

When attaching the seal auxiliary member 28 of a cell 21, the terminal drawer member 31, the hydrogen stripping section material 33 or 33', and the seal members 29, 41, and 34 to the side attachment wall of a cell 21 direct picking, as

shown in drawing 6 , each part article can be arranged in a predetermined array, and it can join to the side attachment wall of a cell 21 in one on a screw. If it does in this way, it is prevented that each part article moves independently and it can prevent damage on a cathode 23. Moreover, it becomes unnecessary to also make large beyond the need cathode 23 through hole prepared in each part article according to a motion of a cathode 23, and it becomes easy [a seal].

[0040]

Moreover, since magnitude of the hydrogen stripping section material 33 and the crevice established in 33', i.e., the part which collects hydrogen, can also be made small in accordance with arrangement of a cathode 23, the magnitude of the hydrogen stripping section 25 whole is also miniaturizable.

[0041]

The joint section 35 for deriving the collected hydrogen to the exterior of an electrolysis cell is formed in the above-mentioned hydrogen stripping section 25. Moreover, hydrogen stripping section 25' is the hydrogen stripping section 25 of another side, and since hydrogen can be derived to the exterior, the joint section for deriving hydrogen to the exterior is not prepared. What is necessary is just to prepare the hydrogen stripping section 25 and the same joint section, when

deriving hydrogen from this hydrogen stripping section 25' to the exterior.

[0042]

Deformation may produce the part to which the seal member of the both ends of a cathode 23 is allotted by the pressure by the seal member. In order to prevent this, as shown in drawing 3 or drawing 5 , the protecting tubes 42, such as brass, may be inserted in the centrum of the pipe of the cathode 23 of a part with which the seal members 29 and 32 and 34 grades are allotted.

[0043]

Next, the hydrolysis reaction of the water using this electrolysis cell for hydrogen generating is explained.

[0044]

First, an alkali water solution is poured in into a cell 21, the cathode of a power source is connected with a terminal 32, and the cathode of a power source is connected with a terminal 27. Subsequently, a power source is switched on. If the electrical and electric equipment flows, oxygen will occur from an anode 24. This oxygen surfaces the inside of an alkali water solution, and reaches the gaseous-phase section 40 near the top-face section of a cell 21. And it is drawn from the oxygen exhaust port 38, and is spread to atmospheric air.

[0045]

Moreover, hydrogen occurs in the peripheral face of a cathode 23. Occlusion of this hydrogen is carried out to a cathode 23, and it is emitted to the centrum of a cathode 23. And it is guided to the hydrogen stripping section 25. Then, it is drawn by the cell 21 exterior via the joint section 35.

[0046]

The hydrogen absorption nature metal used for a cathode 23 has the property which carries out occlusion only of the hydrogen and does not carry out occlusion of other gases or liquids. For this reason, the hydrogen gas obtained serves as a high grade, and can be used for the device which requires the hydrogen of the high grades for instruments for analysis etc.

[0047]

[Example]

As an electrolysis cell for hydrogen generating, the cell of a publication was used for drawing 1 - drawing 4 . namely, the cathode 23 which becomes the interior of the cell 21 made from polypropylene from the pulp of palladium metal -- length -- three train, while making the anode 24 which carries out width 3 train arrangement and consists of a nickel plate meet inside [both-sides side] a cell

21, it built perpendicularly between cathodes 23, and has arranged, and specified quantity insertion of the sodium-hydroxide water solution was carried out to the cell 21 interior. Moreover, the seal was carried out as a seal member 29 using the O ring made of ethylene-propylene rubber. Furthermore, the water surface detector was inserted from the hole 36, the water feeder was connected with the water feed hopper 37, and the amount of water in a cell 21 was held uniformly.

[0048]

The electrolysis-of-water reaction connected the cathode of a power source with the terminal 32, and connected the anode plate of a power source with the terminal 27. In addition, the detail conditions in the electrolysis of water are as follows.

Electrical potential difference : 2.6-2.9V Direct current: 30A Sodium-hydroxide water solution: NaOH/H₂O=10g / 1l. Use palladium pulp: ϕ 3mmx200mm and 9 Electrolysis time amount: Two years The generated hydrogen was taken out from the joint section 35, and measured the yield. The hydrogen yield was 220 cc/min. The hydrogen yield fell to 200 cc/min after progress for about one year. A sodium hydroxide reacts with the carbon dioxide in air, and this is considered to

be because for the concentration of a sodium-hydroxide water solution to have fallen.

[0049]

[Effect of the Device]

According to this design, since the pipe which consists of a metal of hydrogen absorption nature used as a cathode has been arranged near a cell pars basilaris ossis occipitalis so that those both ends may penetrate the both-sides wall of a cell, it is completely immersed in it into an alkali water solution in this whole cathode. For this reason, since this pipe can be intercepted from oxygen, the whole cathode can be used effectively.

[0050]

Moreover, a cathode is not joined to a cell side-attachment-wall part by welding, but when it holds carrying out a seal by the seal member, the corrosion of welding by contact in an alkali water solution and the leakage produced in a weld zone can be prevented. Furthermore, even when one of cathode tubing is damaged, the whole cathode tubing is not exchanged, but it is exchange of only one damaged cathode tubing, and can be used continuously.

[0051]

When an anode plate is built perpendicularly between cathodes while putting the cathode in order in all directions, and an anode plate and a cathode are arranged by turns, even if a cathode bends with the heat produced by hydrogen absorption, since a straight direction turns into the direction of a vertical, change is not produced in the distance of an anode plate and a cathode further again. For this reason, even if a cathode bends with heat, the bias of the hydrogen yield by the part of a cathode does not arise, but it can prevent that a hole opens to a cathode by the pulverization of the cathode by local hydrogen absorption.

[0052]

Moreover, it can use the whole hydrogen generating electrolysis cell as a compact while it can omit excessive piping etc. as a hydrogen generating electrolysis cell including a water service tank, since this cell made the electrolysis section and the water tank section unify. Therefore, it can collect into a compact also as the whole hydrogen generator which equipped this with the equipment which needs a power source etc. For this reason, even when instrument for analysis is adjoined and it installs, a location cannot be taken but miniaturization can be attained as the whole instrument for analysis.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The perspective view showing the example of the electrolysis cell for hydrogen generating concerning this design

[Drawing 2] Drawing 1 is notching drawing of longitudinal section a part.

[Drawing 3] The vertical section front view of drawing 1

[Drawing 4] The vertical section side elevation of drawing 1

[Drawing 5] Drawing 3 is an expanded sectional view a part.

[Drawing 6] The decomposition perspective view showing the example of the seal auxiliary member of the electrolysis cell for hydrogen generating concerning this design, and a hydrogen stripping section

[Drawing 7] The perspective view showing the conventional electrolysis cell for hydrogen generating

[Drawing 8] Drawing of longitudinal section of drawing 7

[Description of Notations]

1 Cell

2 Lid

3 Terminal

4 Cathode

5 Seal Member

6 Seal Member

7 Cathode Support Plate

8 Terminal

9 Alkali Water Solution

10 Hydrogen Stripping Section

11 Hydrogen Exhaust Port

12 Gaseous-Phase Section

13 Oxygen Exhaust Port

14 Water Inlet

15 Weld Zone

16 Weld Zone

21 Cell

22 Alkali Water Solution

23 Cathode

24 Anode

25 25' Hydrogen stripping section

26 Anode Coupling Rod

27 Terminal

28 Seal Auxiliary Member

29 Seal Member

31 Terminal Drawer Plate

32 Terminal

33 33' Hydrogen stripping section material

34 Seal Member

35 Joint Section

36 Hole

37 Water Feed Hopper

38 Oxygen Exhaust Port

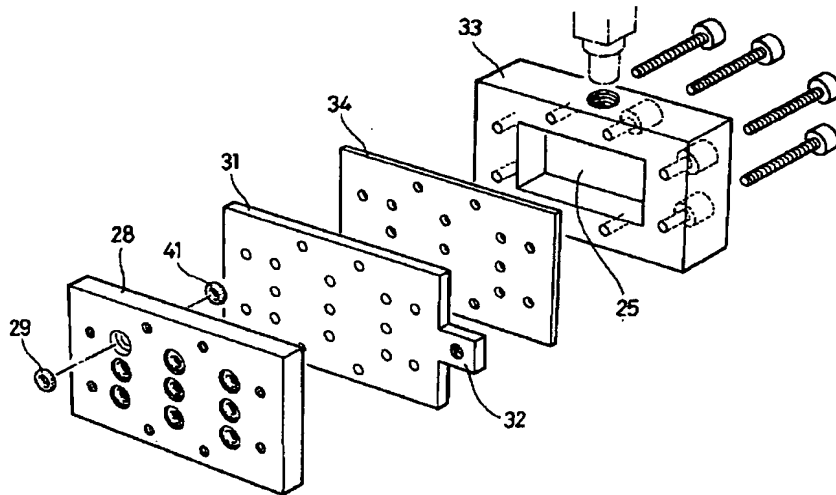
39 Cathode Hole

40 Gaseous-Phase Section

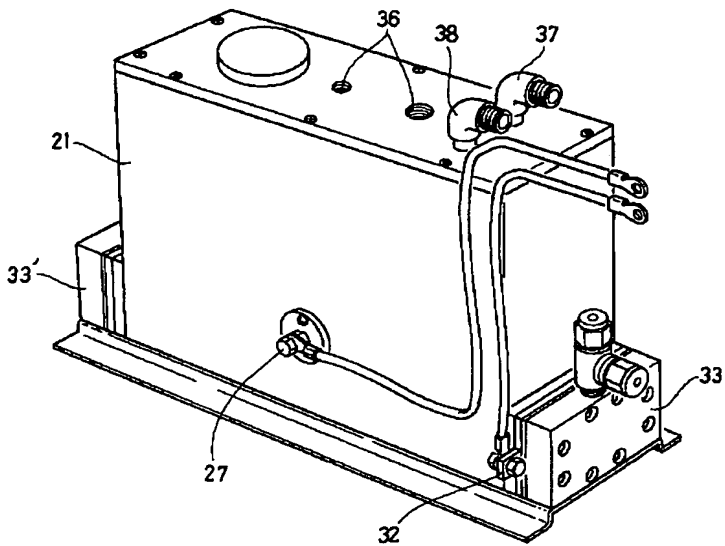
41 Seal Member

42 Protecting Tube

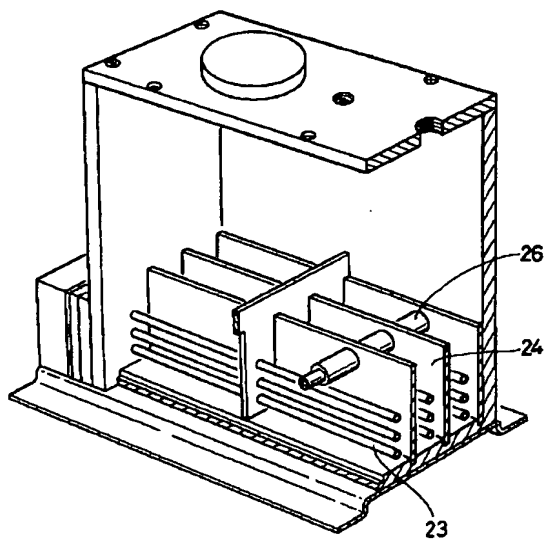
[Drawing 6]



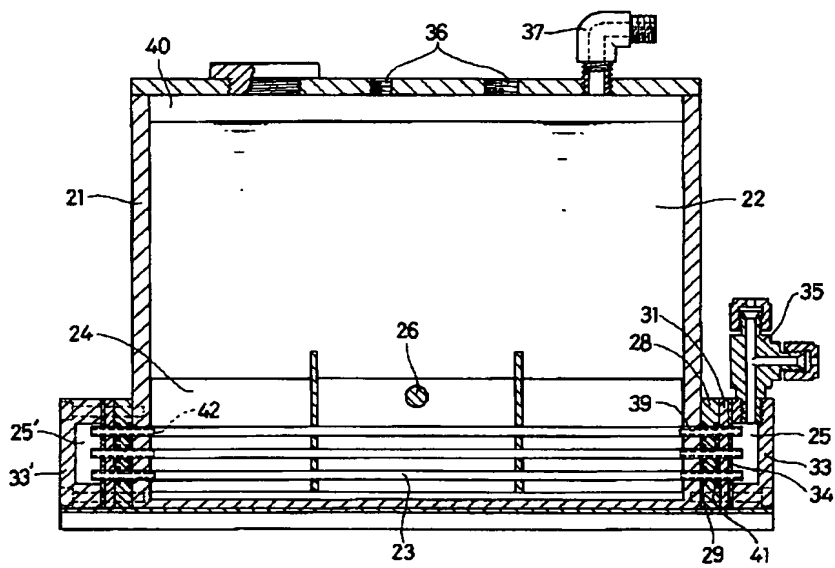
[Drawing 1]



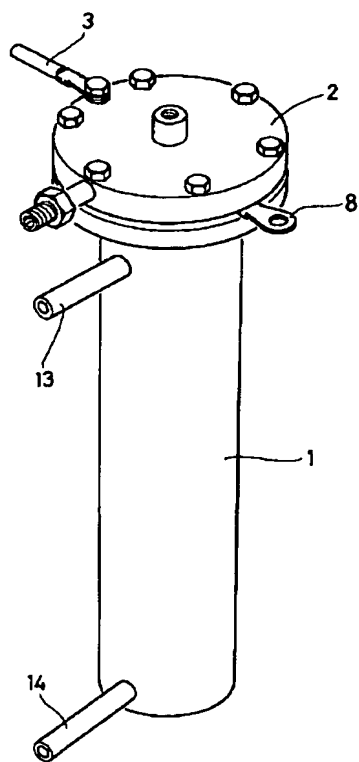
[Drawing 2]



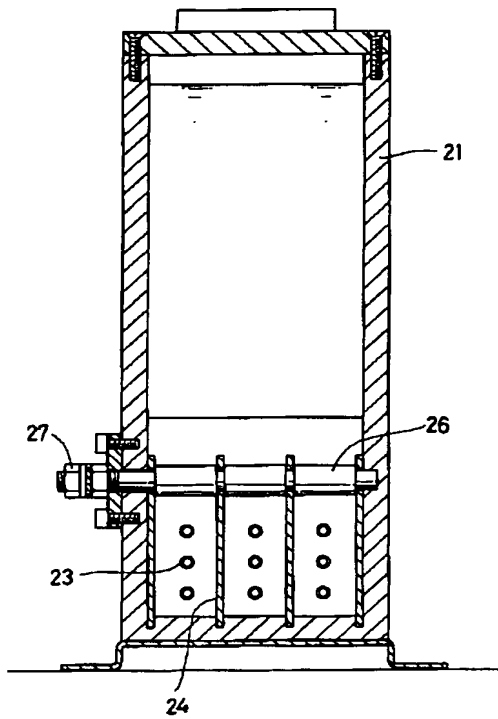
[Drawing 3]



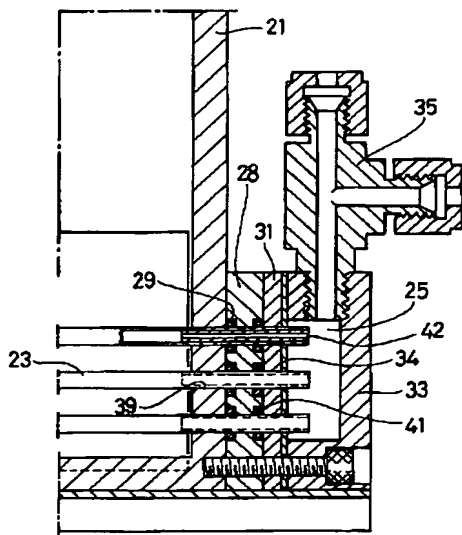
[Drawing 7]



[Drawing 4]



[Drawing 5]



[Drawing 8]

